BET 1: FUNCTIONAL TREATMENT IS NON-INFERIOR TO BELOW THE KNEE CAST IN ADULTS WITH ACUTE CLOSED PROXIMAL FIFTH METATARSAL FRACTURES

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ABSTRACT
A short cut review was carried out to establish whether functional treatment is better than conservative treatment with a below knee cast at decreasing time to functional recovery and fracture union in adults with an acute closed proximal fifth metatarsal fracture. Four papers presented the best evidence to answer the clinical question. The author, date and country of publication, patient group studied, study type, relevant outcomes, results and study weaknesses of these papers are tabulated. It is concluded that in proximal (zone 1 and 2) fractures of the fifth metatarsal functional treatment with immediate mobilisation is at least non-inferior to immobilisation in a cast.

THREE-PART QUESTION
In [adults with an acute closed proximal fifth metatarsal fracture] is [functional treatment better than conservative treatment with a below knee cast] at [decreasing time to functional recovery and fracture union]?

CLINICAL SCENARIO
A 30-year-old woman presents at the ED with a fracture of the proximal fifth metatarsal. You wonder whether functional treatment with removable support is better than immobilisation with a below knee cast.

SEARCH STRATEGY
PubMed, December 2018
LIMIT to humans and last 20 years.

SEARCH OUTCOME
A total of 274 papers were found in PubMed, of which 264 were irrelevant or of insufficient quality. One article was found by scanning the references. Despite extensive effort, we were not able to obtain a full-text version of one possible relevant article. In total, we therefore reviewed 10 papers, of which two were meta-analyses. Of the other eight papers, we discarded six which were already reviewed within the two meta-analyses. These two meta-analyses and the remaining two articles are summarised in table 1.

COMMENTS
Fractures of the proximal fifth metatarsal are commonly seen in teenagers and young adults. According to the Lawrence and Botte Classification there are three main zones of fractures: tuberosity avulsion fractures (zone 1), fractures at metaphyseal-diaphyseal junction (zone 2, also known as Jones fractures) and proximal diaphyseal fractures (zone 3, also known as Stress fractures). In this BestBET, we only reviewed the results of zone 1 and 2 fractures. The four articles described above compared functional treatment with immobilisation in cast. Throughout the literature, we found significant heterogeneity in both fracture classification as well as different treatment options. Functional treatment did consist of elastic bandaging, boot splinting, mobilisation with flat hard-soled shoe and Jones bandaging. With every type of functional treatment patients were allowed to bear weight. Most studies, however, did not describe whether patients actually did so and for how long. Despite the different treatment options, both the meta-analysis and the two observational studies report either no significant difference in functional outcome or even some better results with functional treatment when compared with immobilisation in a cast. However, we should note that of the nine studies the two review papers were based on, three were included in both meta-analyses.

Clinical bottom line
In proximal (zone 1 and 2) fractures of the fifth metatarsal functional treatment with immediate mobilisation is at least non-inferior to immobilisation in a cast.
Best Evidence Topic reports

Table 1  Relevant paper(s)

<table>
<thead>
<tr>
<th>Author, date and country</th>
<th>Patient group</th>
<th>Study type (level of evidence)</th>
<th>Outcomes</th>
<th>Key results</th>
<th>Study weaknesses</th>
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<tbody>
<tr>
<td>Smith et al,¹ 2011, UK</td>
<td>Cast or plaster slipper versus bandaging (elasticated tubular bandage, zinc bandaging or Jones bandage)</td>
<td>Meta-analysis (6 studies)</td>
<td>Cast versus bandaging:</td>
<td>No significant difference in frequency of union, non-union, refractures, development of CRPS or complications after 12 weeks.</td>
<td>Two of six articles were not useful for this BestBET as they described operation versus cast outcomes. In all three RCTs the patient allocation was not blinded.</td>
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<td>Time to preinjury level of activity:</td>
<td>One study noted no significant difference. Another study noted a shorter time in the bandage group.</td>
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<td>Plaster slipper versus bandaging (1 study):</td>
<td>Better functional outcome in plaster slipper group at 2 weeks. No significant difference in functional outcome after 6–12 weeks. No significant difference in complication rates or refractures.</td>
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<td>Biz et al,² 2017, Italy</td>
<td>Walking cast (n=68) versus functional bandage with a support of a flat hard-soled shoe (n=76)</td>
<td>Retrospective study</td>
<td>Radiographic and functional outcomes:</td>
<td>No significant difference between groups. Earlier in functional treatment group. No significant difference.</td>
<td>Retrospective design. Choice of treatment was decided based on the preferred practice of the doctors.</td>
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<td>Return to sports: Complications:</td>
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<td>Pituckanotai et al,³ 2018, Thailand</td>
<td>Cast versus bandage or boot splinting</td>
<td>Systematic review and meta-analysis (5 studies)</td>
<td>Foot function scale scores: Non-union rates:</td>
<td>Better in removable support group after 1 month and at last follow-up point. Risk of fracture non-union was greater by approximately 57% in the cast group.</td>
<td>Only two of five relevant papers were RCT.</td>
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<td>All studies had a small sample size of 37–50 patients.</td>
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<td>Complications and pain scores were not noted.</td>
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<td>Úbeda-Pérez de Heredia,⁴ 2018, Spain</td>
<td>Functional method with rigid-soled shoe (n=92) versus cast or another non-load-bearing device (n=119)</td>
<td>Retrospective case and control observational study</td>
<td>Length of temporary disability: Complications:</td>
<td>Shorter in functional treatment group. Higher for older patients, and in jobs with high demands. Less in functional treatment group.</td>
<td>The results of 17 patients who were operated were not included in this BestBET. No follow-up was noted due to the retrospective study design.</td>
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CRPS, chronic regional pain syndrome; RCT, randomised controlled trial.

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REFERENCES


